

Appl. No. 10/046,603; Filed January 16, 2002  
Amendment Dated November 25, 2003  
Reply to Office Action of October 10, 2003

**Listing of Claims:**

1. (currently amended) A homogeneous catalyst for the production of methanol from purified synthesis gas at low temperature and low pressure which comprises a transition metal capable of forming a transition metal complex with coordinating ligands, and an alkoxide, said catalyst dissolved in a methanol solvent system, provided said transition metal complex is not transition metal carbonyl.
2. (original) The homogenous catalyst of claim 1, wherein said coordinating ligands are selected from the group consisting of N-donor ligands, P-donor ligands, O-donor ligands, C-containing ligands, halogens and mixtures thereof.
3. (original) The homogenous catalyst of claim 1, wherein the catalyst components are completely dissolved in the methanol solvent system to yield a homogeneous liquid solution.
4. (currently amended) The homogenous catalyst of claim 1, wherein said purified synthesis gas comprises CO<sub>2</sub>, CO, or H<sub>2</sub>.
5. (original) The homogenous catalyst of claim 1, wherein said transition metal is a metal from Group 6, Group 8, Group 9, Group 10, Group 11, Group 12 or mixtures thereof.
6. (original) The homogenous catalyst of claim 1, wherein said transition metal is Cr, Mo, W, Fe, Ru, Os, Co, Rh, Ir, Ni, Pd, Pt, Cu, Au, Zn, Cd, or mixtures thereof.
7. (original) The homogenous catalyst of claim 1, wherein said transition metal is selected from the group consisting of Ni, Pd, Mo, Cu, Ru, Fe and mixtures thereof.
8. (original) The homogenous catalyst of claim 1, wherein said ligands are selected from the group consisting of chloride, acetylacetonate, 2, 2'-dipyridyl, bis (cyclooctadiene), 1, 10-phenanthroline, 1, 2-bis (diphenylphosphinoethane) and mixtures thereof.

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9. (original) The homogenous catalyst of claim 1, wherein said metal alkoxide comprises a metal selected from alkali metals or alkaline earth metals.

10. (original) The homogenous catalyst of claim 1, wherein said metal alkoxide is derived from C<sub>1-6</sub> alcohols, C<sub>2-20</sub> glycols, C<sub>2-20</sub> monoglycol ethers.

11. (original) The homogenous catalyst of claim 1, wherein said metal of said metal alkoxide is potassium or sodium.

12. (original) The homogenous catalyst of claim 1, wherein said metal alkoxide is potassium methoxide or sodium methoxide.

13. (currently amended) The homogenous catalyst of claim 1, wherein said ~~methanol~~ solvent system is methanol.

14. (currently amended) The homogenous catalyst of claim 13, wherein said ~~methanol~~ solvent system further comprise a co-solvent selected from the group consisting of glymes, glycols, monoglycol ethers, amino solvents, other oxygenated solvents and mixtures thereof.

15. (original) The homogenous catalyst of claim 14, wherein said co-solvent is selected from the group consisting of triglyme, tetrahydrofuran, dioxane, polyethylene glycol, derivatives of polyethylene glycol and mixtures thereof.

16. (original) The homogenous catalyst of claim 1, further comprising a co-catalyst, said catalyst being a metal selected from metals from the group consisting of Group 6, Group 7, Group 8, Group 9 and mixtures thereof.

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17. (original) The homogenous catalyst of claim 16, wherein said co-catalyst is a metal selected from the group consisting of Cr, Mo, W, Co, Ni, Fe, Cu, Ru, Rh, Pd, Pt and mixtures thereof.

18. (currently amended) A ~~homogeneous~~heterogeneous catalyst system comprising the catalyst of claim 1 and a support therefor.

19. (currently amended) The ~~homogeneous~~heterogeneous catalyst system of claim 18, wherein said support is selected from the group consisting of zeolites, clays, acidic zeolites, alumina, silica and mixtures thereof.

20. (original) A homogenous catalyst for the production of methanol from synthesis gas at low temperature and low pressure, said catalyst produced by reacting a transition metal complex having coordinating ligands selected from the group consisting of N-donor ligands, P-donor ligands, O-donor ligands, C-donor ligands, halogens and mixtures thereof or precursors thereof with an alkoxide in a methanol solvent system over a temperature range and pressure range over a period of time effective to form said catalyst, provided at least one C-donor ligand is not carbonyl.

21. (original) The homogenous catalyst of claim 20, wherein said temperature range is from about room temperature to about 150°C and said pressure range is from about 1500 psig to about 70 psig.

22. (original) The homogenous catalyst of claim 21, wherein said period of time ranges from about 1 min in to about 30 min.

23-41 (Cancelled)